

As EPA commented on the 2016 report, EPA encouraged DRBC to continue its efforts on the ambient stream temperature assessment in Zones 1A through 1E for reducing the uncertainty using available data and applicable numerical analyzing techniques. DRBC provided additional data in the 2018 Delaware River and Bay Water Quality Assessment Report. Although DRBC acknowledges the water temperature is an important factor for the health and survival of native fish and aquatic communities for water quality assessment in its draft 2018 Assessment Report, currently it is still not able to establish the ambient surface water temperature criteria in Zones 1A through 1E. Therefore, EPA recommends that DRBC continues its efforts to investigate and develop a workable assessment methodology to assess surface waters in the non-tidal river against the thermal mixing zone criteria to support any designated uses in the surface waters.

We concur that temperature is an important water quality parameter in all portions of the Delaware River including Zones 1A through 1E, which currently lack ambient temperature criteria. We will continue to work with our Basin States to investigate and develop a workable thermal assessment methodology to assess surface waters in the non-tidal river to support designated uses.

In 2016, EPA recommended that while primary contact recreation was not a designated use in Zone 3, it would be useful for DRBC to assess Zone 3 for primary contact use. We would like to see a summary of the sampling results to understand how much of the time Zone 3 is achieving primary contact criteria if they were to apply.

In preparation for our Water Quality Advisory Committee (WQAC) meeting on July 18, 2018, we compared existing DRBC bacterial data to existing primary contact recreation criteria and EPA's recommended criteria (based on 36 illnesses per 1000 recreators). We drew the following conclusions:

- The data *would meet* DRBC's primary contact recreation criteria for Zone 3 and upper Zone 4 for both Fecal Coliform and Enterococci using our current assessment methodology;
- The data *would meet* EPA's recommended primary contact recreation criteria for Zone 3 and upper Zone 4 for Enterococci using our current assessment methodology;
- We have not previously collected data for E. Coli in the estuary and therefore could not perform this comparison.

The full WQAC presentation is available at:

[[HYPERLINK "https://www.nj.gov/drbc/library/documents/WQAC/071818/yagecic_recreational-criteria_DelEstuary.pdf"](https://www.nj.gov/drbc/library/documents/WQAC/071818/yagecic_recreational-criteria_DelEstuary.pdf)]

It should be noted that our current assessment methodology uses the geometric mean per zone per assessment year, and the current data collection is once per month. We recognize that current state

of the practice for bacterial assessment typically involves more frequent data collection. As part of our 2019 application for CWA 106 grant, we are seeking funds to perform enhanced bacterial monitoring including:

- Shore based sites where recreation is occurring;
- More frequent sampling for alignment with current assessment recommendations; and
- Addition of E. Coli for comparison to EPA recommended criteria.

We have initiated discussion with our WQAC and will be briefing our Commissioners on September 12, 2018.

Regarding dissolved oxygen (DO), it would be interesting for the report to identify how frequently the Delaware meets EPA's 1986 numeric criteria or the States' criteria, similar to the information presented in Table 11 noting the percent of observations meeting DRBC criteria.

We concur. We are in the process of developing a comparison between existing DO measurements and a range of possible candidate criteria values. This analysis will tell us the frequency with which candidate criteria values might not be met under current conditions, and seasonal periods and conditions contributing to candidate criteria attainment challenges. Our intention is to complete this analysis shortly and present it at an upcoming WQAC meeting.

EPA still recommends that DRBC uses more defined zones for the attainment assessments of aquatic life use (i.e., upper, middle, and lower Zone 5) and recreational use (i.e., upper and lower zone

4) in Tables 2, and 3. EPA also encourages DRBC to consider collecting data in order to expand your biological monitoring program to include the tidal portions of the Delaware Estuary and Bay.

Subdividing existing water quality management Zones across all assessment criteria would have the advantage of establishing criteria consistency within each subarea. It would have the disadvantage, however, of diluting available data. Some Zones, which we can currently assess, when subdivided into smaller sub-zones would be placed in the 'insufficient data' category. We continue to believe that applying the spatially applicable criteria and aggregating results across the Zone is preferable.

There are a several developments which may assist DRBC in developing a biological monitoring program for the tidal estuary:

- We are seeking funds under our 106 grant application for 2019 to perform estuary phytoplankton identification and enumeration;
- We anticipate expanding our ambient toxicity monitoring program to include additional test species;
- We augmented an existing ichthyoplankton survey being performed by PSEG in 2018 to provide better estuary coverage. We are waiting for results from that full program;

- We have issued a contract to the Academy of Natural Sciences of Drexel University to provide professional services, including Task Orders to:
 - Review and make recommendations on our current biological monitoring program;
 - Determine DO needs of estuary species; and
 - Query literature and experts to developing a prioritized list of non-DO estuary nutrient endpoints that could inform nutrient criteria selection (draft Task Order shared with ANSDU for refinement, but not yet issued).

Although this work is in early stages, we agree that pursuit of important biological thresholds is a necessary component of protecting aquatic life use in the estuary.

As noted in EPA's 2018 assessment methodology comments, EPA disagrees with DRBC's approach to use biological monitoring data to assign waters to Categories 1, 2 and 3 only. If DRBC's bioassessment methodology is sufficient to determine a waterbody is attaining aquatic life use it should also be sufficient to determine a waterbody is impaired. EPA recommends that until the interim bioassessment methodology can be finalized, EPA recommends DRBC use biological monitoring data to determine non-tidal Delaware River segments as both "attaining" and/or "not attaining". If DRBC is unwilling to use biological monitoring data for both attaining and non-attaining determinations, DRBC should limit the use of biological assessments to deem sites as "not assessed/insufficient information" and the aquatic life use assessment should go to Category 3 in DRBC's 2018 305(b) report unless other water quality data indicate an impairment is present. EPA recommends that DRBC finalize the interim bioassessment methodology for use in DRBC's 2020 305(b) report to allow for assessment of aquatic life uses in the non-tidal river to be complete.

As mentioned above, we have issued a contract to the Academy of Natural Sciences of Drexel University to provide professional services, including a Task Order to review and make recommendations on our current biological monitoring program. In addition, we are in the process of developing wide-ranging revisions to our current assessment methodology for use in our 2020 assessment. We expect to coordinate extensively with EPA, our Basin States, and WQAC stakeholders as we upgrade and modernize our assessment approach.

During the review of this report, EPA discovered that few minor typos on pages 28 and 34. Please remove the extra “%” in the “Notes” column of Zone 1C of Table 13 on page 28. On page 34, the second sentence of the last paragraph, the “though” should be corrected as “through” in the sentence. For clarification purposes, a few minor edits were recommended as follows:

On page 13 of the document, for the note under Table 4 which reads, “Note: Determination that the numeric water quality criteria is not met requires at least 2 observations (1 observation plus 1 confirmatory observation) that do not meet criteria.” it would be helpful for DRBC to restate the period of time that the two observations cover referenced on page 8. For instance, the Note could read, “Note: Determination that the numeric water quality criteria is not met requires at least 2 observations (1 observation plus 1 confirmatory observation) that do not meet criteria over the five-year data window.”

On page 14 of the document, the subsection titles for the Contact Recreation section need to be reformatted to be readable.

On page 16 of the document, for the note under Table 5 which reads, “Note: Determination that the numeric water quality criteria is not met requires at least 2 observations (1 observation plus 1 confirmatory observation) that do not meet criteria.” it would be helpful for DRBC to restate the period of time that the two observations cover referenced on page 8. For instance, the Note could read, “Note: Determination that the numeric water quality criteria is not met requires at least 2 observations (1 observation plus 1 confirmatory observation) that do not meet criteria over the five-year data window.”

Thank you. These corrections will be made prior to publication of the final report on DRBC’s web site.